INTRODUCTION

In 1991, a Memorandum of Agreement (MOA) was signed by the USDA Forest Service (Region 3), U.S. National Park Service, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management (Arizona and New Mexico), U.S. Bureau of Indian Affairs, and the States of Arizona and New Mexico. This Agreement established the Southwest Fire Management Board, enhanced the Joint Powers Agreements in place at the time, and provided the direction to plan, prioritize, and implement the coordination of policies, directions, and standards for fire management activities in the Southwest Area (SWA). It also detailed that the land management agencies within the States of Arizona and New Mexico, as well as western Texas and Oklahoma, would work collaboratively to plan for wildfire emergency responses that would be as efficient and cost effective as possible.

This interagency annual report is provided as a means to summarize wildland fire activities during 1997. It provides highlights of the 1997 fire season from an agency perspective, as well as, wildfire activity statistics, fire cache reports, and overall information on the movement of incident management teams, crews, overhead, and equipment to incidents in the southwest and other parts of the United States. The report will not include operational aspects of firefighting, specifically firefighting tactics, equipment usage, training, or other managerial activities of suppressing wildfires in the SWA.

As you will see from the information provided in this report, the 1997 fire season in the SWA can best be described as slow and somewhat uneventful. The Energy Release Component (ERC) climbed to above normal levels on several occasions, indicating the potential for high to extreme fire behavior. Overall, fire activity was primarily kept to the initial attack level, keeping the number of large fires at a minimum. Incident Management Team (IMT) assignments, mobilization of overhead and crew resources, and utilization of aircraft were also kept to a minimum. For example, no type I IMT and only one type II IMT was assigned to an incident during the entire season. By the end of 1997, the amount of fire activity in the SWA was far below the statistical average for the decade of the 1990's.

On April 1, 1997, the Southwest Coordination Center (SWCC) posted the SWA "Wildland Fire Operations" Web Site on the Internet. The cover and other parts of this annual report show some of the components of the site. By the end of the fire season, several agencies stated they had utilized the site on a daily basis throughout the fire season. These agencies indicated that the speed of receiving information and intelligence to the units in the field had increased tremendously.

A limited number of copies of this document will be printed and distributed. If additional copies are needed, they can be found on the Southwest Area Web Site (http://www.fs.fed.us/r3/fire) under the Fire Management Activities page.

Finally, a lot of people put a tremendous amount of energy into providing the information in this report. Our thanks goes out to each and every one of them.

Safety First

The Southwest Fire Management Board (SWFMB) was quite busy during 1997 undertaking a number of items requiring the Board's attention. Some of the items the Board was involved in include:

A revised Memorandum of Understanding (MOU) was signed with the New Mexico State Environment Department pertaining to interagency smoke management.

The first National Training on Fire Prevention was held in Albuquerque during November 1997.

The SWFMB had to stand down one of two of its Type I Interagency Incident Management Teams at the start of the 1997 season. This was due to the unexpected retirement of the team's Incident Commander. The team could not be maintained because no other qualified type I Incident Commander was available to take over the team.

The SWFMB met with Agency Administrators twice during the year to brief them and to obtain their input on fire management issues affecting the Southwest Area.

The SWFMB continued to implement the Federal Fire Policy Review Action Items into interagency fire suppression activities within the SWA.

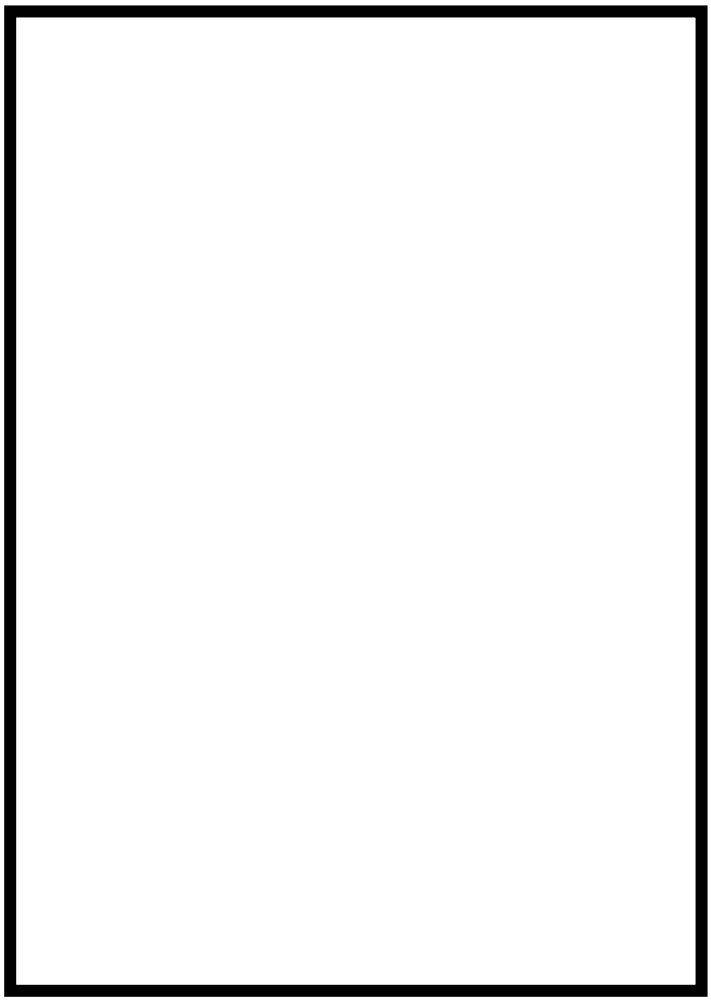
Several members of the SWFMB attended a meeting of all the Geographic Area Coordination Groups in Boise during April 1997 to try to standardize operations with the National Multi-Agency Coordinating (MAC) Group.

The SWFMB continues to be concerned with the shrinking resource pool of fire suppression qualified personnel within the SWA. Each year it becomes more difficult to field two type I Incident Management Teams (IMT) to fulfill the national commitment. Therefore, the Board identified a number of candidates at the Command and General Staff level to receive out-of-area fire assignments. These individuals are in the position to take over selected positions on a type I IMT once their task books have been signed. The Zone type II IMT Boards are also finding it increasingly harder to field enough qualified candidates to fill Zone type II Incident Management Teams.

A change occurred in the Chair of the SWFMB during November 1997. The tenure of Cliff Chetwin, NPS, was completed and Frank Smith, NMS, took over as the new Chairperson. With Cliff's leaving, the NPS lost local representation out of the Santa Fe office. Cliff's replacement will be Dan O'Brien, of the Intermountain Support Office in Denver, Colorado.

Frank Smith
New Mexico State
Chairperson, Southwest Fire Management Board

AGENCY HIGHLIGHTS



USDA Forest Service

Region 3
Southwestern Region

The 1997 fire season was as uneventful as any previous season in most people's memories. During the season, there were 1,798 fires on the National Forest's burning 8,592 acres. Of these, 643 fires were human caused, which burned a total of 2,723 acres. No type I team was activated and only one type II team was activated in the Region. However, the Region supported large fire activity in California with firefighter and overhead positions.

A "pre-El Nino" weather influence kept fire danger below the extreme level throughout the year. The weather systems did allow for a large prescribed natural fire (PNF) to be managed on the Gila National Forest and a large management ignited prescribed fire (MIPF) on the Gila and Coronado National Forests. In addition, the Coconino National Forest was successful in accomplishing a large program of management ignited prescribed fires during the Fall and early Winter burning season.

The "Fire Program Management for Fire Management Officers" course was offered and completed for the first time in the Southwestern Region. The course was considered a success. A significant amount of time was spent by all fire managers in the Region with several new fire management programs such as the Wildland Fire Situation Analysis (WFSA), the Wildland Fire Policy, and the pack test.

The Region experienced a number of personnel changes. I accepted the Assistant Director for Operations position replacing Bill Russell, who went to work for the Washington Office. John Schulte replaced John Burton, upon his retirement, as the Center Director, Southwest Coordination Center. John Fehr, Cibola National Forest, accepted a position in the Equipment Technology Center in San Dimas, CA. And finally, Brian Powers accepted the Lincoln National Forest Fire Management Officer position.

At years end, Van Bateman, Happy Jack Fire Center FMO, Coconino National Forest, was selected for the first time by the Southwest Fire Management Board as one of two type I Incident Commanders. The other IC, Gary Loving of the Apache-Sitgreaves National Forest, has been an IC since 1995.

Charlie Denton
Assistant Director for Operations, Aviation and Fire Management

National Park Service

Intermountain Region
Southwestern Parks

The 1997 fire season within the Southwestern Area of the Intermountain Region can be characterized as having had the appearance of being slow. A dry spring, interrupted by an active El Nino during the summer and fall months, produced extensive moisture throughout the region. The moderated burning

conditions provided many parks with a longer burning window. Parks within the Southwest Area of the region suppressed 112 active fires, responded to 190 support actions. Acreage burned on NPS lands was down considerably to 1,402 acres. Parks within the region were able to successfully treat 4,170 acres through prescribed burning and 1,617 acres through fires managed for resource benefit.

Fires that were noteworthy in the SWA during 1997 included Bandelier National Monument's (BAND) Lummis Fire, managed by a prescribed fire management team (Zimmerman). This fire represented the first significant test of the current fire management policy and provided a number of lessons about the speed in which other agencies will be moving toward implementation. The Devils Bathtub prescribed fire at Saguaro National Park (SAGU) was the largest in the park's history of fire use. Interestingly enough, both BAND and SAGU as well as other parks within the region implemented prescribed fires concurrent with fires managed for resource management benefits.

Program Accomplishments

Reorganization continued to play a major role in the operations of the Intermountain Region fire management program this year. The conversion of the Southwest Support Office's (SWSO) Fire Program Assistant position into a Wildland Fire Management Specialist position will further re-align functional responsibilities in the Denver office for the entire region. The new position will be hired early in 1998, and enable the Denver office to provide much better service to it's parks. The SWSO Fire Management Officer position was converted into the Regional Aviation Manager position, with responsibilities in the Intermountain Region, as well as for two other regions. The Intelligence Coordinator's position at the Southwest Coordination Center (SWCC) in Albuquerque now works under the supervision of the Regional Fire Management Officer in Denver. A fire management presence no longer exists in the Santa Fe Office.

Intermountain Region personnel participated on several national workgroups this year, including the National Interagency Fire Statistics Information Project, instruction of S-590, and development of an informational brochure intended to inform park visitors of the Service's fire management philosophy. In addition, the new Aviation Manager position planned, coordinated and manage the interpretive/outreach effort at the air show at Oshkosh, Wisconsin, which addressed overall NPS aviation and the overflight issues specifically. This continues to be the largest NPS outreach initiative regardless of subject area.

A unique approach to evaluating the hazard fuel relationship to cultural and historical resources was implemented in the region in 1997. Called the Archeological Site Hazard Fuel Assessment Project and hosted by Mesa Verde National Park, it serviced 12 parks and made assessments on 82 sites. The objective is to assess site vulnerability to wildland fire and recommend mitigating actions to protect sites through fuels modifications. The park has the option of using the recommendations to put a hazard fuel reduction project together and hopefully avoid the loss of the resource and/or costly rehabilitation of sites post fire.

The 1997 field season also marked an expansion of the fire effects monitoring program within the Intermountain Region. The nine existing programs in Firepro parks continued their quality work, and two additional Firepro parks implemented new programs. Traveling crews that service multiple parks were established at Bandelier, Carlsbad Caverns, Saguaro, and Zion. The region sponsored two fire effects training courses, RX-92 Fire Monitoring Program Design and Implementation and RX-80 Preburn Inventory Techniques.

Bandelier National Monument hired Al King, formerly Chief Ranger at El Malpais National Monument, to replace John Lissoway as FMO. John retired from his position at Bandelier during 1997. In addition, Big Bend National Park hired John Morlock to become the first full-time Fire Management Officer at Big Bend.

Dan O'Brien
Regional Fire Management Officer

Bureau of Indian Affairs
Tri-Area Offices
Albuquerque, Navajo, Phoenix Area's

The Southwest Area is represented by the Bureau of Indian Affairs (BIA) Tri-Area Offices located in Albuquerque, Navajo, and Phoenix. There are four personnel who are located at the Southwest Coordination Center in Albuquerque. Of which, I am a BIA Assistant Director. Ron Matt is an Area Coordinator responsible for the mobilization, reassignment and demobilization of resources between home units and incidents in and outside the Southwest Area. Steve Rossiter is the Tri-Area Aviation Specialist coordinating with the three Area Offices and the interagency partners on procedural aircraft operations, training and accident investigations. And, Steve Larrabee is the Regional Fire Planner providing technical assistance and oversight of fire management planning activities for the Southwest Area.

Overall, the 1997 fire season was below normal in fire occurrences and total number of acres burned. As a result, Southwest Firefighter (SWFF) crew fire dispatches within and outside of the Southwest Area were very low.

Albuquerque Area Office

The Albuquerque Area Office's 1997 fire season was below normal for the fire management programs. Due to the above normal precipitation, burning conditions were below normal for initial attack activity and experienced little fire activity. Statistics show that, Area-wide, for all Indian Trust lands the number of fires reported was 350 wildland fires with a total of 3,000 acres burned. Southwest firefighter (SWFF) crew dispatches, a vital source of income for tribal members, were below normal with a total payment of $736,500. On a normal fire year the average total payment will be at six million dollars. The BIA agencies concentrated on providing additional fire training to their SWFF crews and refurbishment of fire equipment.

Navajo Area Office

Fire rehabilitation on two (2) fires from 1996 were completed. Replanting of the White Clay fire was completed. A total of 59,000 seedling was planted.

Navajo Area received a personal visit from Mr. Steve Haglund, Branch Chief, BIA, National Interagency Fire Management. Mr. Haglund spent three (3) days, August 5-7, touring the area and visiting with Tribal and Area staff. His visit concluded with a meeting and briefing for the Area Director concerning Fire Program management activities.

The BIA, NIFC ADO review team was at Navajo Area, Branch of Forestry, Fire Management on August 6, 1997 to audit our payment team. Some deficiencies were noted, but overall the ADO team members are doing excellent work.

Scott Bradshaw, NIFC Fire Management Planning, also brought his staff of Fire Planners to the Branch of Forestry the first week of August to review and assist Navajo Area with its planning analysis.

Steve Rossiter and Larry Hindman (USDA Forest Service, Region 3) conducted a IHOG helicopter crew and helicopter readiness evaluation in June 1997. Overall readiness of the crew and vendor was satisfactory. An unannounced follow-up inspection was also done the first week in July, 1997.

The Tri-Area meeting was hosted by the Navajo Area, Branch of Forestry, in February, 1997 at the Holiday Inn in Gallup, NM.

Navajo Area sent a fire dispatcher and a tribal employee to the Fire Program Management course in Albuquerque, NM on December 2-11, 1997.

Wilson Barber, Navajo Area Director retired in April 1997, Ms. Elouise Chicharello has been named as Acting Area Director.

Phoenix Area Office

On June 3, 1997, the Phoenix Area Office, San Carlos Agency, Fire Management Section lost a veteran firefighter, Leo Stevens. Leo, a member of the San Carlos Apache Tribe, died as a result of an aircraft accident during routine fire reconnaissance flight. Also killed in the accident was Jesse D. Gates, a contract pilot for Safford Aviation. Both men loved to fly and were dedicated to their work. Our hearts and prayers go out to Leo, Jesse, and their families.

The Phoenix Area Office's fire season statistics show that, Area-wide, 695 wildland fires burned a total of 2,866 SPFS acres of Indian trust lands.

The Hopi Agency had the 70 acre Keams Canyon Fire, a wildland/Urban interface fire at the tribal and agency headquarters. There were several buildings damaged or destroyed by the fire. The Hopi Tribe and the BIA Hopi Agency have completed stabilizing and protecting the site damaged by the fire. Personnel from the Hopi Tribe, BIA (Hopi and Fort Apache agencies), and Phoenix Area Office provided input into a burned area emergency rehabilitation plan.

The Phoenix Area Office, agencies, and tribes provided over 242 support actions consisting of crews, overhead, equipment and training to support the wildland fire efforts at the area, regional, and national level. Within the Area, the Phoenix Area Office expended $5,785,013 on wildland fire in 1997.

Willie Begay
Assistant Director, Tri-Area Fire Management

Bureau of Land Management

Arizona State Office
Fire and Aviation Group

Arizona BLM entered the 1997 fire season with a potential problem on the far, west side of the state. A three-year drought in that part of the state had placed the brush and timber areas in severe drought stress. Palmer Drought Indices indicated the area was in extreme conditions as early as May. It was shaping up to be a very busy fire season. However, by the end of 1997, Arizona BLM had fallen below the 10 year average in number of fires and acres burned. This was partly due to less than normal lightning activity and higher humidity readings in the desert area. Arizona BLM ended up making 336 total fire responses burning 19,169 acres.

Arizona BLM	1997	10-year Average
Fires	210	336
Acres Burned	1,304	19,169

Arizona Strip

The Arizona Strip Field Office requested and received severity funding for increased protection for the timber and brush areas of the district. The severity funds allowed the field office to add 9 additional firefighters and keep two additional engines (1 light, 1 heavy). This was very effective in keeping the acres down in the Ponderosa Pine fuel.

The Arizona Strip fire staff continued to develop interagency cooperation with the Dixie National Forest and the Dixie Resource Area of the Cedar District, BLM. As a result, the Arizona Strip is now responsible for fire management on BLM lands in Washington County, as well as the Pine Valley Ranger District of the Dixie National Forest. The agreement established between the parties will require moving logistical support out of the Southwest Area and into the Eastern Great Basin Area.

The Mt. Trumbull forest restoration project proceeding on schedule. The fire staff completed the first series of prescribed fire to reduce fuel loading in the ponderosa pine fuel type.

Phoenix/Kingman

The Kingman Field Office also was under severe drought in the chaparral fuel type. The State Fire Management Office was able to reallocate funds to supplement the Phoenix/Kingman program so no severity funds were requested. The fire staff continues to develop the air center and single engine air tanker base at the Kingman Airport. The base, while used in 1997, will have greater retardant capability and ready room established for the 1998 fire season.

The Phoenix Office continues to participate in the Agua Fria Grassland Coalition for prescribed burning. They completed the Joe Hill prescribed burn (800 acres) and assisted the USDA Forest Service in burning one other block.

Safford/Tucson

The Safford fire staff is providing national technical assistance for the Single Engine Air Tanker (SEAT) program. Their expertise has been used to develop a SEAT Managers Guide and associated training course. They continue to improve a model SEAT reload base at the Safford Airport. Funding has been approved in FY-98 for a new dispatch/air office at the facility. Construction should begin in the spring of 1998.

Yuma/Lake Havasu

The Yuma/Lake Havasu Field Office fire staff is improving cooperation with other Department of Interior (DOI) agencies and the Arizona State Land Department. DOI (i.e. BLM, FWS, and BIA) partners are combining fire staffs in an interagency effort. BLM is providing the Fire Management Officer and BIA is providing the Fire Control Officer. The current fire planning effort is being conducted on an interagency basis to determine what fire resources are needed along the Colorado River. This planning should result in less duplication of effort by DOI agencies along the river.

Al Alavarez
State Fire Management Officer

Bureau of Land Management

New Mexico State Office
Fire and Aviation Group

The 1997 fire season was a moderate one for BLM New Mexico, as it was for most agencies in the Southwest. The number of fires and acres burned were much lower than average, largely due to moist conditions during the spring and summer. One measure of the lack of activity during the season was the air tanker based at Roswell. The air tanker flew so little, that non-fire practice drops were required to maintain proficiency. In addition, the 50th anniversary of the Roswell UFO incident in July drew thousands of visitors to public lands, yet the expected rash of human-caused fires failed to occur.

Though the moist weather during the spring and summer slowed our prescribed fire program somewhat, BLM New Mexico field offices managed to get over 30,000 acres burned. During the 1998 season, we plan to treat over 53,000 acres.

There are a number of new faces in the BLM New Mexico fire program. In Roswell the new FMO is Jim Desmond, Charlie Luevano was selected as the AFMO, and Vivian Oaxaca returned to New Mexico as the Logistics Coordinator for the District. In Las Cruces, Butch Wilson, the new FMO, moved over to the BLM from the Fish and Wildlife Service in Texas. Dusty Voss, former Logistics Coordinator at Roswell, is now an Area Coordinator at the Southwest Coordination Center. In 1998, the Albuquerque Field Office expects to fill the vacant Zone dispatcher position located in Albuquerque.

As of this writing, it looks like BLM New Mexico will adopt the "Two Tier" organization. Under that structure, BLM-New Mexico will go from four Districts with Resource Areas to seven Field Offices. When the organization changes are approved in Washington, Dan Huisjen will lead the fire program in the Socorro Field Office, Pat Pacheco will take on the fire duties in the Taos Field Office, and the Carlsbad Field Office will maintain an integrated fire program in conjunction with the Roswell Field

Office. The "Two Tier" organization will bring about some realignment in Zones; it is anticipated that Taos and possibly Farmington will seek to join the Taos Zone.

In keeping with the new fire policy, fuels reduction and restoring fire to the ecosystem remains a high priority for BLM New Mexico. Nationally, BLM is striving to increase the number of acres burned under prescription by sevenfold. Backed by increased Hazardous Fuels Management funding, BLM New Mexico will work to develop and maintain the critical skills required for an aggressive prescribed fire program while maintaining suppression capability. Under the new fire policy, balancing suppression needs against prescribed fire accomplishments will be a major challenge for the fire agencies in the Southwest and the nation.

Bob Lee
State Fire Management Officer

U. S. Fish & Wildlife Service
Region 2
Southwest Region

The 1997 wildland fire season throughout Region 2, which encompasses all Oklahoma, Texas, New Mexico, and Arizona, experienced an average wildfire season (18,457 acres burned) and a record year for the prescribed burn program (96,027 acres burned). In the Southwest Area, Fish and Wildlife Service engine crews responded to 27 Refuge wildfires, which burned 4,590 acres of Refuge lands in Oklahoma, Arizona and New Mexico. Refuges in Arizona and New Mexico accomplished 25 management ignited prescribed fire projects for a total of 23,933 acres.

The Bouy Line Fire burned 2,525 acres on the Optima National Wildlife Refuge on March 6, 1997. Including other agency lands a total of 11,000 acres burned from this wildland fire.

Refuges in New Mexico had 8 wildfire incidents for a total of 295 agency acres burned. A lightning caused fire on the Las Vegas National Wildlife Refuge was controlled at 80 acres by the New Mexico State Forestry Division and 5 volunteer fire department engines.

Bitter Lake National Wildlife Refuge prescribed fire program burned three units for a total of 1,705 acres. The 1,435 acre St. Francis burn involved aerial ignition with a helitorch. Many outside resources, which included personnel from the County Volunteer Fire Department's. NPS, BLM, and BIA, were needed and used to accomplish this burn.

Refuges in Arizona had 18 wildfire incidents for a total of 1,870 agency acres burned. Buenos Aires National Wildlife Refuge suppressed 15 wildfires totaling 1,520 acres and provided resources on 7 incidents to assist interagency cooperators within the Southeast Arizona Zone. Refuges on the Lower Colorado River responded to 3 wildfires, which burned 350 acres. A Fire Prevention Order establishing fire restrictions for the Bureau of Land Management administered public lands within the Yuma and Lake Havasu Field Offices in Arizona and California, and the Imperial, Cibola, Bill Williams, and Havasu National Wildlife Refuges was effective from May 21, 1997, until September 7, 1997. This fire prevention effort of establishing fire restrictions on public lands along the Lower Colorado River is showing positive results since its inception during the 1996 fire season.

Buenos Aires National Wildlife Refuge burned 15 units under prescription totaling 20,700 acres. This is the most acres and highest number of units burned in one year in history of this Refuge. Forty-five volunteers from rural and urban fire departments participated on the burns. Imperial National Wildlife Refuge burned two units for 180 acres.

Mike Phillips
Regional Fire Management Coordinator

Arizona State Land Department
Division of Fire Management

The number and acreage of wildland fires during 1997 were well below the five-year average. The yearly precipitation levels in the State have been below normal for the last couple of years, thereby reducing the amount of annual grasses, which have reduced fire activity considerably below the 1994-1995 fire season.

The 1997 Legislature approved the creation of a fire severity fund of up to one million dollars to be used when fire conditions are above normal. This fund will allow the Division to stage suppression resources to aid in initial action to reduce escaped fires. The reorganization of the Division was completed in the fall of 1997. This change reduced the number of districts from six to three. This change in the organization placed more individuals in the field.

During 1997, Arizona State Land Department supported our federal partners with 115 wildfire suppression assists.

Dave Behrens
Fire Management Division

State of New Mexico
State Forestry Division

The New Mexico Forestry Division experienced a moderate fire season in 1997. Late summer and fall moisture in 1996 increased fine fuel loading throughout the state to record levels. However, periodic moisture brought on by an unusually strong El Nino pattern in 1997 kept fire indices generally below historic levels in most of the state. The Division experienced no project fires in 1997.

For the calendar year 1997, the Division recorded 611 statistical fires that burned 132,790 acres of state and private land throughout New Mexico. Of that total, there were six class "G" fires that burned more than 92,000 acres of grassland in eastern New Mexico.

1997 saw the New Mexico State Legislature authorize, for the first time, a preparedness budget for the Division. This funding allowed the Division to staff additional engines on all six districts. A fuels reduction project around the City of Las Vegas water reservoir was completed, as well as hazard-risk analysis in the urban/wildland interface in several subdivisions was undertaken by the Chama, Capitan, and Bernalillo Districts. The purchase of Global Positioning System (GPS)

units and Geographic Information System (GIS) software provided the means to produce a pilot project using the technology to rate the fire hazard in four private subdivisions in the Jemez mountains, within the Santa Fe National Forest. This paved the way for comprehensive evacuation planning that can be utilized by the State, USDA Forest Service, and local rural fire departments.

The Division had minimal dispatching of its employees on out-of-state fire assignments during the 1997 fire season. The Division had 20 percent of its employees filling positions on type I and type II Interagency Incident Management Teams during the 1997 fire season.

Frank Smith
Chief, Fire Management Division

National Weather Service
Weather Service Forecast Office
Phoenix Area Office

Summary of weather prior to and during the fire season in Arizona from winter 1996 through autumn 1997.

The winter of 1996-97 saw more precipitation than what occurred during the very dry previous winter. However, even this past winter wasn't extremely wet. It was thanks mainly to the wet and cold January of 1997 that helped build up the snow pack. During that month, some cold and intense weather systems affected the state, resulting in snowfalls of over 60 inches in some areas. This month was preceded and followed by relatively dry months, with December and March being very dry.

Early spring was very dry and also very warm. However, April and May, as well as into June saw precipitation closer to normal, though even through that period, precipitation was probably on the low side from normal. June was noticeable for it's lack of temperature extremes. This month can often be very hot, increasing fire danger, but this did not occur this time. For example, Phoenix failed to reach 110 degrees for the first time in June since 1983.

The monsoon was rather weak through July, especially through the first half of the month. A stronger than normal westerly flow kept moisture out of the state, resulting in below normal precipitation for the whole month of July. However, the monsoon pattern started to pick up somewhat during the latter part of July, and through the month of August. In fact, August saw rainfall almost on a daily basis in some parts of the state.

Late summer in September continued to have a monsoonal or southeasterly flow as high pressure aloft resided to the east of the state. A return to a weak southwesterly flow started to gradually diminish the monsoon moisture after mid month, as this had slipped southward into Mexico. However, some areas of the state, including southwest Arizona, experienced some very heavy rain in the latter part of the month, due to the effects of Tropical Storm Nora, which was actually still a hurricane as it crossed northern Baja towards southwest Arizona. Drier and cooler than normal weather returned to Arizona during the month of October.

Robert Berkovitz
Fire Weather Forecaster

National Weather Service
Albuquerque Area Office

In stark contrast to the very active 1996 fire season, an average to above average snowpack combined with a long and active monsoon season to make 1997 fire season a short and relatively inactive one.

The year began with the snowpack ranging from 130 to 170 percent of normal across the northern mountains to 80 to 100 percent of normal across the southern mountains. Major winter storms

with widespread moderate to heavy precipitation occurred in January and much of February, further bolstering the existing snowpack. An unusual dry spell that lasted from late February through March decreased the snowpack and caused fuel moistures to actually fall slightly below those of March 1996.

The dry weather of late winter was brought to an end by an unusually wet April, in which several major winter storms brought abundant mountain snowfall and sharp rises in fuel moistures. This moist trend continued into May, as a strong tap of moisture from the Gulf of Mexico produced monsoon-like thunderstorm activity across much of the state, with a noted lack of dry lightning. Also notable was the lack of severity of the normally strong springtime winds, which along with the above average precipitation, left fuel moistures rather high leading into summer.

June alternated between periods of hot and dry weather and thunderstorms brought about by incursions of monsoonal moisture. The most active part of the fire season actually occurred from late June through mid-July, when a period of hot and dry weather was broken by an increasing monsoonal flow which brought widespread dry lightning to the mountains. Thereafter, the normal summer rains and increased humidities associated with the monsoon season resumed and lasted through September.

After a brief dry spell in early fall, the onset of a strong El Nino pattern assisted in producing several winter storms which brought heavy, early season snows to the mountains. By the end of December, the snowpack ranged from 110 to 140 percent of normal across the northern mountains to 130 to 200 percent across the southern mountains.

Chuck Maxwell
Fire Weather Forecaster